Getting going in HO Traction

A Clinic presented at the

Boston Trolley & Transit Meet

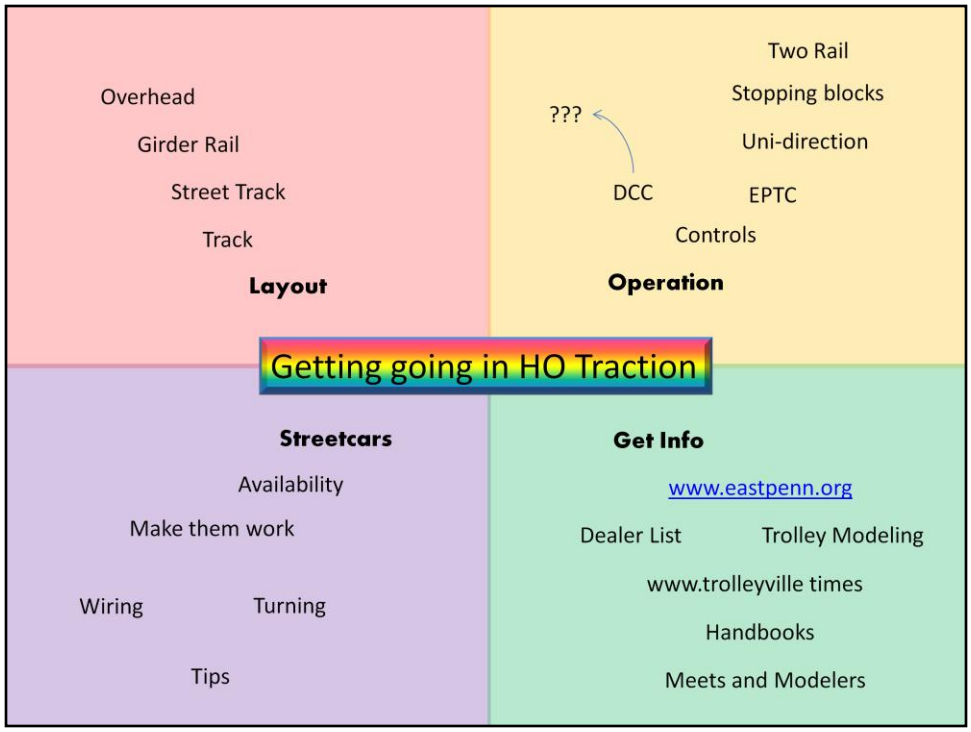
April 28, 2012

East Penn Traction Club

Rich Allman **Bob Dietrich**

Read the notes to see all the points we wanted to make.

One scenario you could take:
1.Beginner-a loop of track and a Bachmann trolley-out of the box, on the track.
Spend a bit more and get a Bachmann Spectrum Peter Witt or Birney
and you will be ready to advance through steps 4 and beyond.
Maybe some scenery that you like.
Maybe a switch to a siding. Tack it to some homosote or spike it to a piece of
plywood and get an entry-level transformer-your toe is in the water.
2.Tenderfoot-a dog bone-slightly more prototypic, same Bachmann trolley.
maybe get a second car-it will happen to you very quickly
3.Novice-get a Bowser F Line car-out of the box on the tenderfoot layout,
a high quality, accurate model-you will quickly see that what you got is whole
level up in quality-now you're hooked!
4.Advanced Novice: string overhead around your dog bone and change at least
your Bowser car to overhead operation literally w/ the flick of a switch;
now there is no turning back. Here is where you must learn where to turn to get
overhead wire, poles, and hangers. You will need to master Soldering 101-there is no
prerequisite course-YOU CAN DO IT!
5.Add a switch to your dog bone and get comfortable w/ the placement of the overhead
frogs. Now you will need to do some reading but it's not Greek and following the rules
is not that hard! We will tell you how to get-or if you are super-ambitious-make-
operationally reliable trolley poles. Maybe best is just to buy them.
You will need to learn where to obtain switch frogs--they are cheap and hanging them
is some work, but it is not rocket science!
6.Add some more switches and you suddenly have a choice of operating routes!
7.NOW you are at the point where you dig into the books-they are easy reading now
that you are interested, and the suitable web sites.
If you are Boston guys, you're in luck-Charlie Pitts, Chuck Chisolm, Tony Tieuli and
HO'er Brian Ward have your back!
8.Next you check out the dealer tables at shows like this one,
the Annual New Brunswick Trolley Meet, and the
biennial East Penn Traction Club Meet(a word from our sponsors) and search eBay
constantly for HO Trolley stuff, including poles and switch frogs



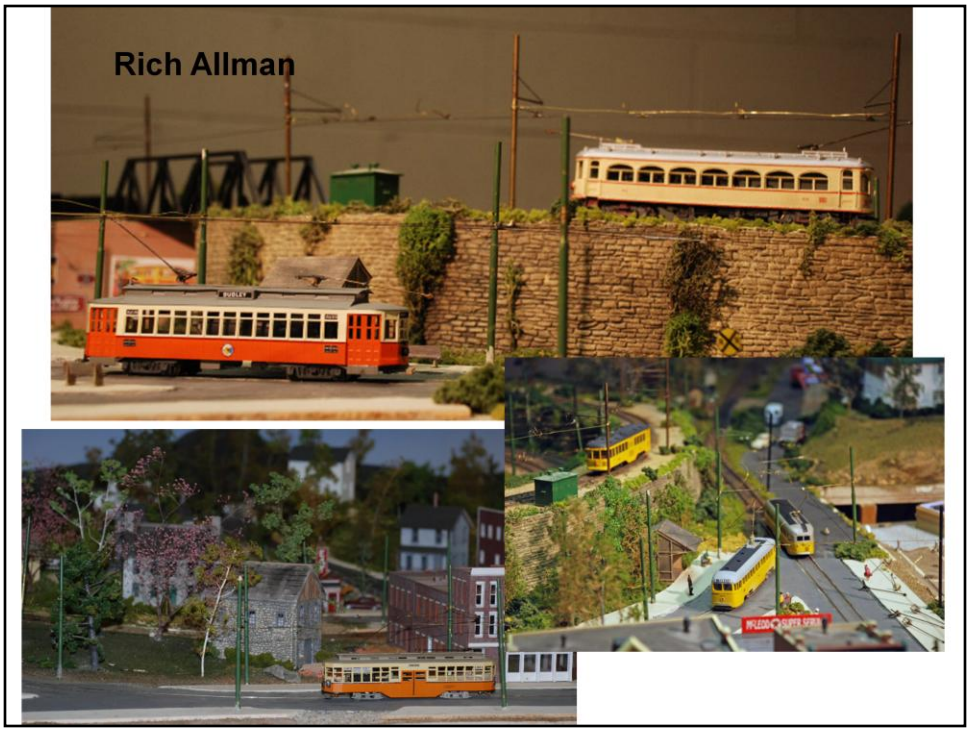
But there are many scenarios we couldn't begin to cover them, so lets take another approach.
We'll break things down to 4 groups.
We hope to address :
1.operation and layout building, including options for T rail or Girder rail, how to get to street running
2.trolley availability-from of the shelf ready to run cars to craftsman kits-given where we are, w/ special emphasis on available Boston prototypes
3.operational improvement-turning, climbing, and options for improved power drives, need for flywheels
4.where to get needed essentials-line poles, hangers, switch pans, trolley poles
5.what tools are needed
6.where and to whom to turn for direction in either getting started or refining skills-published materials, on-line resources, mentors

Bob Dietrich

Bradley Clarke Photo

I grew up in the big house on the corner.
I rode streetcars to get places – not a fan.
Did model railroading as teen – then Air Force etc
20 years later built model of the house.
The modeling bug bit again and I Wanted a layout to put the house on.

But there was no room for a RR layout between furnace and Hot Water heater, but a trolley layout fit nicely.
The next thing I knew I was president of East Penn.
I still have this layout in my basement as well as a bunch of other modules. See what else is in my basement here - http://www.eastpenn.org/shj.htm.



Rich Allman-Philly guy w/ Boston roots-my grandparents and father, now my daughter and grandkids-I am the odd man out though I went to college @ Boston University and was post-doctoral fellow @ BU

Life long trolley guy-rider, photographer, collector, joiner, and HO modeling wannabe

Took the plunge in 1995 and never looked back - knew nothing,

not afraid to admit what I did not/do not know or to ask for advice and to ponder solutions to problems

LAYOUT

Country – Interurban line.
- •Code 70 looks best.
- •Match with standard RR turnouts.

City.
- •Always Use code 100 rail.
- •Atlas flex track is easiest.
- •PA Heritage Models makes plastic street sections.
  - •Straight and 6” radius curves.
  - •Some trolley cars may need adjustments.
  - •Search eBay for “HO Street track”.

Street Turnouts.
- •Orr Turnouts from Custom Traxx
  - •Match PA Heritage radius
  - •But no inserts.
  - •Code 100 rail.
  - •Solder to PC ties
  - •Need to cut gaps

I use Micro Engineering code 70 flex-track for open trackwork.

In city Code 100 is high but you don’t see height in street. It matches other components like Orr Switches & PA Heritage street.
Atlas is very flexible vs Micro Engineering.
Not all trolley car Drives can take 6” out of box.

Adjust Orr switches to same height as track – depends on track and street used.
We usually solder them to PC board ties.
The photo is on my first layout and I spiked rail directly to plywood – no PC ties.

LAYOUT

Girder rail – spin your own streets.
- •Code 70 rail on its side against code 100.
- •O scale solution.
- •Can be done w/o solder

Orr Girder Rail – from Custom Traxx
- •Most realistic
- •Needs curving tool
- •Solder to PC ties.
- •Matches Orr turnouts.

You can make girder rail with code 70 rail. It is easy to make but difficult to curve. Most O scale modelers use this method because there is no O scale girder rail available.

Orr girder rail should be soldered to PC ties.
Turnouts can be messy, if doing 2-rail they need gaps.
We use just the points to get larger radius – build your own frog.
See the brick street? There are pieces of Walthers street cut to fit.
Street paving material – wallboard compound, Water Putty – avoid spackle or other hard stuff.
Keep paving below railhead.
Seal plaster to keep dust down.

LAYOUT

Example of a stone carved street.

Enough street carving for my lifetime.
I used Rock-Hard Water Putty and did a little at a time. I wet the section when I was ready to carve and it softened nicely.

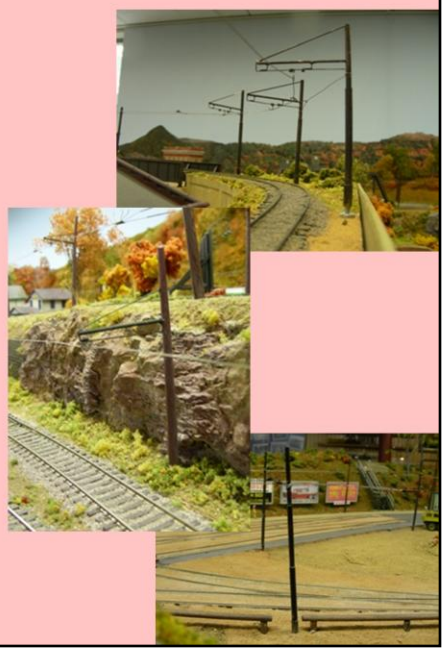
LAYOUT

OVERHEAD - Fear not!
- •Not Difficult but tedious.
- •Several good articles written.

Poles.
- •Jason's Poles.
- •Threaded Brass rod.
- •Home made.

Fittings – frogs, hangers etc.
- •Use O scale hangers.
  - •None made in HO scale.
- •Home made.
- •Use HO or O frogs.

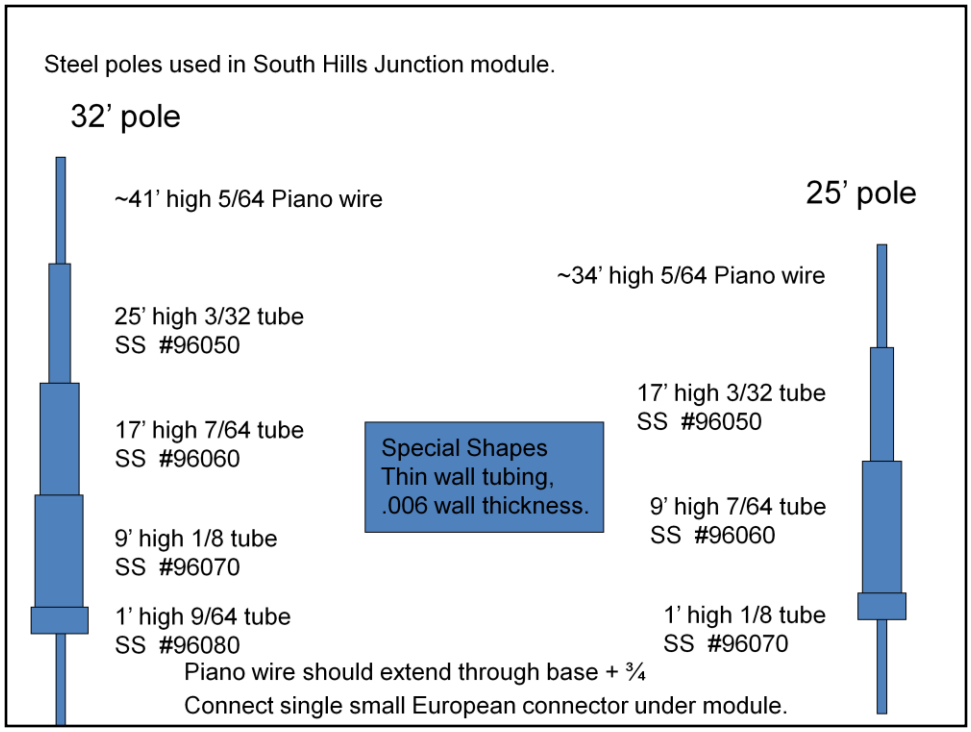
Wire.
- •Phosphor Bronze or Nickel Silver.
- •Stretched brass for pull-offs.



Commercial HO poles from Jason. Top photo.
Others were made before but no longer, they can sometimes be found at hobby shows.
I used a commercial telephone pole to make wood pole. I made a RTV mold and cast resin poles with brass rod in the center. Middle photo.
In the South Hills Junction module I made steel poles. – bottom photo and next slide.

Hanging overhead:
Once the technique is mastered Hanging wire is not difficult. See methods described in handbooks listed at end of presentation.

Most overhead components can either be purchased or home made.
I/we use nickel silver wire – stretch it before using.
Pull-offs can be same wire or thinner 28 gauge brass wire – stretch it first.



In the south Hills Junction module I made my own poles.

Drill hole smaller than 5/64" through homosote/plywood.

Hammer piano wire through the hole.

I use European terminal block (single section) from Radio Shack to attach wire under module.

Run a feeder to every pole and to every piece of rail.

Trolley cars.

What is available, ready to run.

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- Bachmann PCC $30.
  - New mechanism in 2009, runs well.
  - Not the best looking PCC on the market.
  - Sits high but can be lowered.
- Bachmann Brill trolley $27
  - Good looking plastic model
  - Old mechanism (as far as I know).
- Bachmann Single Truck Birney $91.
  - Good looking
  - Good running
- Bachmann Peter Witt $92
  - Very good looking.
  - Very good running.
- Bowser F Line PCC $106, All-Electric $127
  - As modified by SF Muni.
  - Very good looking.
  - Very good running.
- ConCor PCC

More to come.

Streecars as they say in Pittsburgh and, Streetcaahs in Boston.
We'll discuss US Models only.
These are out of the box onto your 2-rail layout. Prices from Amazon.
Most have an overhead option.
find the "antenna" switch.

Trolley cars.

Cars that are more fun– some assembly required.

- Cast resin bodies:
  - Add your own drive.
  - •Miniatures by Eric has a Type 5 +
  - •Customtraxx has Commonwealth series of Boston PCC's +
  - •MTS produced Boston Picture Window PCCs.
  - •KND Enterprises.
  - •Imperial Hobby Productions.
  - •Funaro & Camerlengo (F&C)
  - •Milwaukee Speed Rail startup.
- Brass imports:
  - •Older models need repowered.
  - •See East Penn Web site.
  - •Find models on E-BAY
- Older white metal kits.
- Wood kits.
  - •Labelle
  - •KND

You can find specific models – like Boston cars or Pgh 1700 PCC samples.
Most are just body shells. You get to clean up, paint, decal, add windows, overhead collection, and lighting.
And a drive.
Some new brass is available but most is resale stuff that probably needs repowered.

Trolley cars.

Make them run.

Floor & drive.

Bowser 1998 drive - smooth, reliable, relatively easy and affordable.

- 6' 6" wheel base 3 size wheels.
- Add an A-Line flywheel;
- Got a floor? Cut hole and just add motor and drive.
- No floor? Use Bowser floor & drive.

If Bowser doesn't fit:

Hollywood Foundry.

- Bull Ant – self contained drive wheelbase 3'6" up and wheels 20.5" to 63".
- Low Boy – under floor drive, separate motor, 5'6" or 6' wheelbase 24" to 33" wheels.
- 2-Axel Power Bogie – direct replacement for Bowser drive.
- Diablo – Assemble it yourself drive like 2-Axel Power Bogie.

Others.

Old Bachmann GE 44 Tonner – Cheapest, works, not as reliable.

Bachmann Spectrum Gas Electric – fine mechanism for large interurban.

See my clinic from 2009 EPTC Meet http://www.eastpenn.org/repowering_ho_cars1.pdf.

Bowser drive – recommended if it will fit. 6'6 wheelbase acceptable from 6' to 7' prototype. Side frames hide wheels enough that it doesn't matter.

Hollywood Foundry Bull-Ant is great, now with a belt drive to deaden sound.
Low Boy to get an under floor drive.
Many many options on their web site. Get lowest gear ratio.

If you can find them a older 44 tonner will yield two drives for cars that don't need to run perfectly.

Trolley cars.

Make them run.

Wiring:

Overhead is positive, rail negative.
HO Poles are usually removable – rod fits into a brass tube bushing.
Standardize on one size
Add tube to resin car body by soldering to PC board and gluing to ceiling.
Include wire to reach floor (motor) – get polarity right.
If adding lighting put wiring in ceiling.

Trolley Poles:

Readily available in different styles but they don't all work.

True to prototype.	Functional.
Proper Base – 2 or 4 springs,	Constant pressure on wire
Length – sometimes too short.	Good vertical and horizontal movement
Vertical arc– may not go high enough.	Shoe tracks through frogs
Spring tension varies.	

MY Standard on brass bushing for O/H is 1/16 OD drilled with #55 bit. Fits PS Poles.
But if you're starting out standardize on a more reasonable size, like .032"
Bushing must be 90 degrees from horizontal.

Poles that look good don't always work.
Except on PCC, with shroud, I use Precision Scale poles. They are also the cheapest, but they must be assembled.

Trolley cars.

Make them run.

TIPS.
Make them turn on 6" radius.
Enlarge hole for Bowser drive.
Remove excess on universal joints.
Assure wiring not binding.
East Penn web for Bachmann Witt

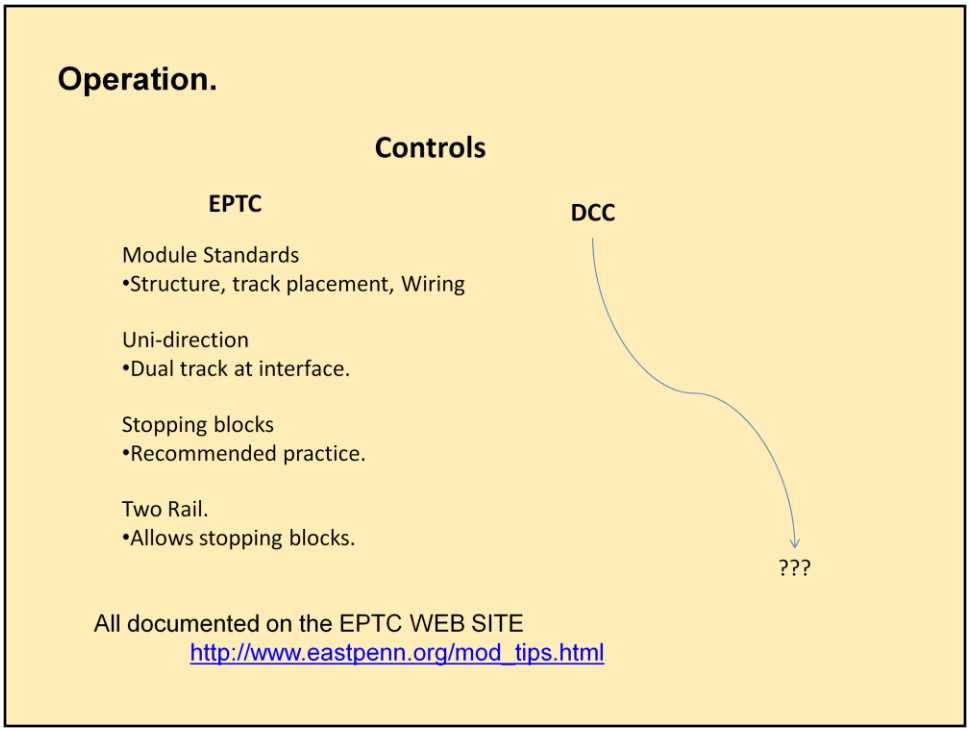
Attach Body to floor.
Resin body:
- Cement bars above & below floor on sides.
- Spread side of body to install and remove.

Metal/Wood body:
- Tabs above floor. Screws at front and/or rear.

See http://www.eastpenn.org/repowering_ho_cars1.pdf for details.

I don't like a large screw reaching from floor to ceiling right inside the windshield. So I spend time finding other ways of attaching the floor to the body.
Resin or plastic cars have an advantage because they can be spread.

Metal/wood body can't be spread like resin. Tab method must also be used for floor flush with bottom of body.

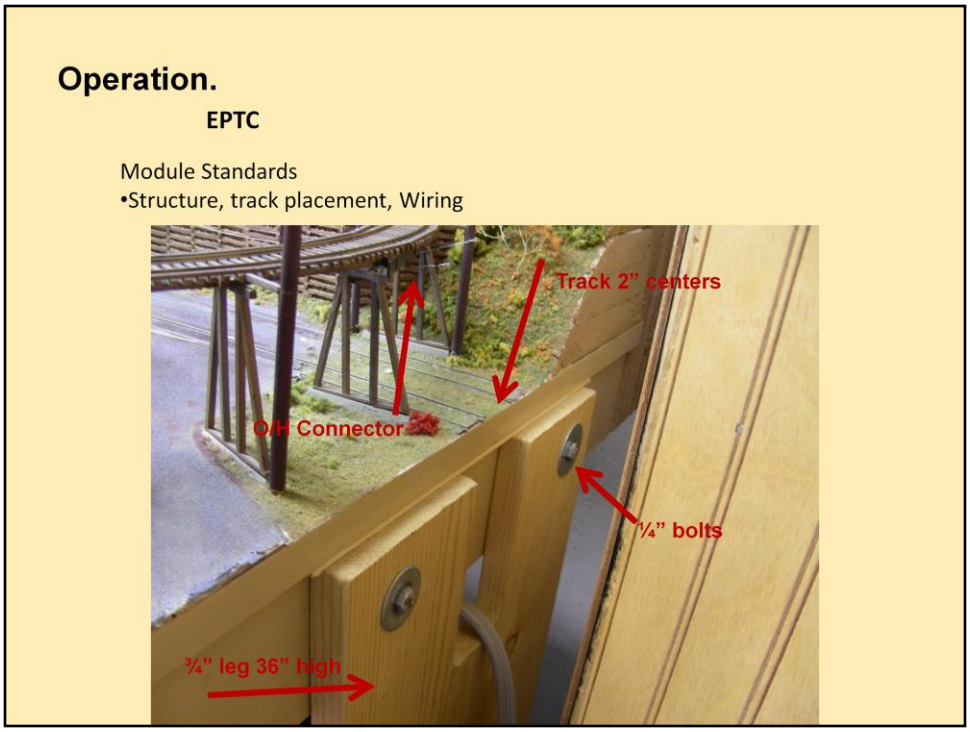


One easy way to get started is by building modules – especially if you have friends who will do the same.
The Dog bone (see slide 1) can be done with two or more modules. Build them to East Penn standards and bring it to our Meet or any place where we are setting up.

The standard only defines the module interface – 2" rail centers, 37" from floor, and wiring. Everything in between is up to the builder.

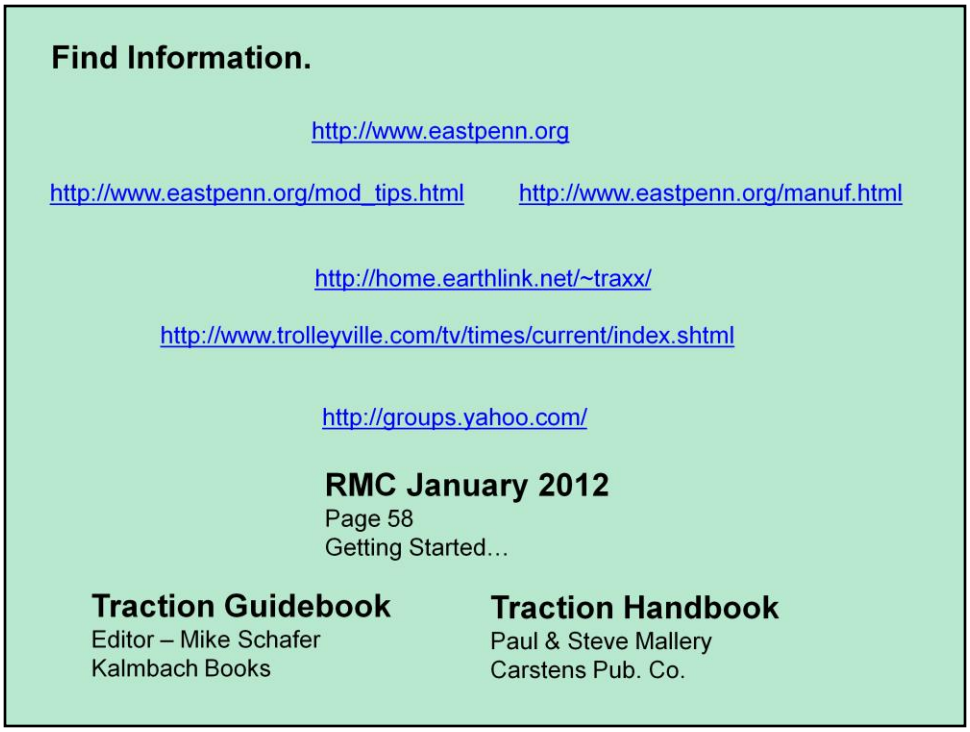
Most of our modules use a relay system of block detection so we don't need to watch every car all the time. If you built that original module to run two rail you are ready to add the relay detection. All this is laid out in the Trolley Modeling page of our web site.

Find DCC info at Trolleyville and the tips page of our web site



Here is the only visible East Penn module interface in my basement

The standard only defines the module interface – 2" rail centers, 37" from floor, and wiring.



Information is out there – East Penn dot org is a good place to start.
the two links shown contain most info.

Custom Traxx and Trolleyville times are a joint venture. Get products & lessons from the first and a monthly newsletter from the other.

There are several traction groups in Yahoo – search for them.

But you can't beat the two guide/handbooks.
And there is a good article in this January's RMC on building a beginning trolley layout.

Find Information.

Shows.

- Like this one – Boston Trolley & Transit Meet
- East Penn biennial Meet in the spring of odd years
- The New York City Model Transit Association &
  The Shore Line Trolley Museum show in New Brunswick every fall
- Springfield, Timonium, and other shows for more general model railroad stuff.

Join a club.

- Bay State Society of Model Engineers
- East Penn

Tools and "stuff "you will need to get started
(in no particular order).

- Small screwdrivers-Phillips and slotted
- Selection of small screws, nuts, and washers – 00-90 -- 2-56, 2 mm -- 1.7 mm
- Scissors, sprue cutters, straight and curved forceps,
- **Small hemostats, reverse tension clamps for overhead repairs and hanging**
- Resin core solder and flux
- Toothpicks
- Denatured alcohol
- Radio Shack 25 watt soldering iron and pointed tips
- Wire in various gauges
  - Trolley wire
  - Hook-up wire
- HO scale ruler
- Right angle squares
- Access to paint spray booth
- Xacto knife and blades
- Large and small files in various shapes and routers-diamond preferably
- Sanding sticks in various grits
- Voltmeter and ammeter
- Drills for very fine 80 to ½" and pin vises
- Dremel w/ various attachments, including cutting wheels
- **Dental mirror for checking on overhead problems**
- CA glue, Elmer's White Glue, Elmer's wood glue, CA glue(small bottle! Large ones dry out!)
- Q-tips
- Paper towels, rags. Tooth brush
- Needle nose pliers in various sizes
- Dental picks
- Razor saw
- Lighted magnifier

Seems like a lot to buy, but you'll get it as you go and it will therefore be relatively painless rather than one huge purchase.
A lot of this stuff is readily and cheaply available at the train shows.

Bolded items specific to trolley work.